IN THE SPECIFICATION

Please amend the following ***paragraphs*** of the application to read as follows. (These paragraphs have been amended to comport with the requirements of 37 C.F.R. §1.121(b)(1). Accompanying this *Preliminary Amendment* is Appendix I in which a marked-up copy of the amended paragraph(s) is provided showing all changes (i.e., with deletions enclosed in brackets and additions underlined), pursuant to 37 C.F.R. §1.121(b)(1)(iii).)

PAGES 14-15: Replace the paragraph that spans pages 14 and 15 with the amended paragraph that appears below.

Figures 1A and 1B(1)-(3) are electrical schematics for two embodiments of a tapered birdcage resonator in accordance with the present invention. The tapered birdcage resonator embodiment shown in Figures 1B(1)-(3) is a "receive only" resonator, i.e., the tapered birdcage resonator does not apply the excitation pulses, but rather the coil is used with an external transmit coil. The coil shown in Figures 1B(1)-(3) includes decoupling networks to actively decouple the coil during transmit cycles, which technique is well known to those skilled in the art. As described further below, however, the tapered birdcage resonator may alternatively be a transmit/receive coil, as shown in Figure 1A.

PAGE 15: Replace the second full paragraph on page 15 with the amended paragraph that appears below.

Referring now to Figures 1A and 1B(1)-(3) for the band pass configuration, the capacitors on the small end ring 20 CS 22(a)-22(d) are selected to achieve proper impedance match using a balanced drive technique over 180 degrees of the end ring 20 for each of the two quadrature modes. The drive points are at virtual ground by splitting the end ring capacitors CS 22(a)-22(d) into two equal values CS' 24(a)-24(h) that are double the value of a single end ring capacitor CS 22(a)-22(d). In a preferred embodiment as shown in Figures 1B(1)-(3), the value of CS 22(a)-22(d) is 110 pF and therefore the value of CS' 24(a)-24(h) is 220 pF. Capacitance is distributed in the legs 30, CT 32(a)-32(h) and CL 34(a)-34(h), to minimize any electric field patient coupling to the coil.

PAGES 15-16: Replace the paragraph that spans pages 15 and 16 with the amended paragraph that appears below.

For the embodiment shown in Figures 1B(1)-(3), a total desired adjustable range of capacitance in the legs 30 is 34 pF to 49 pF. Therefore, if CL 34(a)-34(h) is 33 pF then the range of the trim capacitor CT 32(a)'32(h) in parallel with CL 34(a)-34(h) would be 1 pF to 16 pF, as shown in FIG. 1B. Tuning of the coil is achieved by varying the capacitance in the legs CT 32(a)-32(h) of the tapered resonator equally. The capacitors of the large end ring CLE 42(a)-42(h) are selected to minimize the electric field patient coupling to the coil. In a preferred embodiment, the value of CLE 42(a)-42(h) is 89 pF. Because the embodiment shown in Figures 1B(1)-(3) is a receive-only coil, the diodes D1 and D2 and inductors provide transmit decoupling.

PAGE 17: Replace the first full paragraph on page 17 with the amended paragraph that appears below.

Figures 1A and 1B(1)-(3) show electrical schematics for implementing the wire model of Figure 2B. Figures 7A through 7C show the structural characteristics, including a radius of an arc used for the legs, of a preferred embodiment of a tapered birdcage resonator.

PAGE 19: Replace the last full paragraph on page 18 with the amended paragraph that appears below.

Figures 8A and 8B show a tapered birdcage resonator in accordance with the fifth embodiment. Figure 8A, which is a view along the z-axis of the coil, shows the conductor geometry pattern in the XY imaging plane. In the XY imaging plane, the resonator has an elliptical shape, with the major diameter of the large end ring being 10.07 inches and the minor diameter of the large end ring being 9.27 inches. The small end ring has a major diameter of 5.875 inches and a minor diameter of 5.086 inches. As shown in Figure 8B, the radius of the taper towards the small end ring is 4.635 inches, and the radius begins 3.875 inches from the large end ring.

Please amend the following two ***sections*** of the application to read as follows. (These sections have been amended in the manner required by 37 C.F.R. §1.121(b)(2). Accompanying this *Preliminary Amendment* is Appendix II in which a marked-up copy of the amended sections is provided showing all changes (i.e., with the deleted portions bracketed and the additions underlined), pursuant to 37 C.F.R. §1.121(b)(2)(iii).)

CROSS-REFERENCE TO RELATED APPLICATIONS

The invention disclosed in this document is closely related to the following application for patent: *TAPERED BIRDCAGE RESONATOR FOR IMPROVED HOMOGENEITY IN MRI*, U.S. Application Serial No. 09/449,256, filed November 24, 1999, which issued as U.S. Patent 6,344,745 on February 5, 2002. The present application, and the above-identified application on which it is based, claims the benefit of U.S. Provisional Application No. 60/109,831, filed November 25 1998.

BRIEF DESCRIPTION OF THE DRAWINGS

The preferred embodiments of the present invention are illustrated by way of example, and not limitation, in the figures of the accompanying drawings, in which:

Figure 1A depicts an electrical schematic of an embodiment of the present invention for an optimized transmit/receive tapered birdcage resonator;

Figures 1B(1), 1B(2) and 1B(3) illustrate an electrical schematic of an embodiment for a receive-only tapered birdcage resonator;

Figure 2A depicts a wire model for a prior art birdcage resonator, where the wire model may be used in a Biot-Savart software analysis program, in which the conductor geometry pattern represents the case of a dome resonator, where the conductors at the most superior end of the coil converge to a common point;

Figure 2B depicts a wire model of a tapered birdcage resonator used in the Biot-Savart software analysis for the conductor geometry pattern of a novel tapered birdcage resonator, where the most superior end of the coil is dimensionally tapered to optimize the field pattern homogeneity in the XZ and YZ image planes, without sacrificing signal-to-noise performance;

Figure 2C depicts a wire model for a prior art birdcage resonator, where the wire model may be used in the Biot-Savart software analysis for the conductor geometry pattern of a standard cylindrically shaped birdcage resonator;

Figure 3 illustrates a cross sectional plot of the iso-intensity lines of the magnetic flux density (dB) as a function of position with respect to the conductor geometry pattern for the case of a dome resonator as shown in Figure 2A;

Figure 4 illustrates a cross sectional plot of the iso-intensity lines of the magnetic flux density (dB) as a function of position with respect to the conductor geometry pattern of the tapered birdcage resonator illustrated in Figure 2B, where the most superior end of the coil is dimensionally tapered to optimize the field pattern homogeneity in the XZ and YZ image planes, without sacrificing signal-to-noise performance;

Figure 5 illustrates a cross sectional plot of the iso-intensity lines of the magnetic flux density (dB) as a function of position with respect to the conductor pattern geometry of the standard cylindrically shaped birdcage resonator illustrated in Figure 2C;

Figure 6 depicts a wire model of a conductor pattern geometry for a tapered birdcage resonator in which both the superior and inferior ends of the coil are critically tapered;

Figures 7A through 7C show the structural characteristics, including a radius of the arc used for the legs, of a preferred embodiment of a tapered birdcage resonator;

Figures 8A and 8B illustrate an alternative embodiment of a high resolution tapered brain coil having an elliptical shape where the length of the coil is less than the large diameter of the large end ring and the legs are radially tapered; and

Figure 9 is an electrical schematic for the alternative embodiment of the tapered resonator shown in Figures 8A and 8B.

IN THE CLAIMS

Please cancel claims 1-17, and add claims 18-45 as directed below. (The claims have been amended in the manner dictated by 37 C.F.R. §1.121(c)(1). Because claims have only been added or canceled herein, pursuant to 37 C.F.R. §1.121(c)(1)(ii) no marked up version of the added and canceled claims is provided herewith.)